4363

Diag. Cht. No. C100-2

Form 504

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

State: Washington

1—56.3

DESCRIPTIVE REPORT.

Hydrog. *Sheet No.* 4363

LOCALITY:

Willapa Bay

Willapa Bar

1924

CHIEF OF PARTY:

L. P. Raynor

4363

DESCRIPTIVE REPORT

To Accompany Hydrographic Sheet No.____

REPORT, AUTHORITY, PARTY, DATES, LOCALITY, LIMITS.

This report covers the work done by the shore party of L. P. Raynor in a re-survey of the channels over the bar at the entrance to Willapa Bay, Washington. Authority for the work is contained in the INSTRUCTIONS issued to the Inspector of the Seattle Field Station, under date of June 16, 1924. The party consisted of the Chief of Party, Lieutenant (j.g.) E. P. Morton, 2 hands,(leadsmen), 1 hand (recorder), 1 hand (tide observer), 1 hand (hauling in lead), the owner of the boat (coxswain and engineer), and for a few days, 1 hand (extra coxswain). The work was done from the gas launch DORA owned by Mr. Alvin Maupin of South Bend, Washington, and was the boat used by Lieut. F. L. Peacock in 1922. Field work started on July 7 and was completed on July 22, several days being spent on rebuilding or redressing signals.

The work consisted of a resurvey of what is known as the south channel at the entrance to Willapa Bay, from buoy No. 6 out to buoy No. 5, and of the north channel from buoy No. 6 out over the shals to deep water. This latter channel is unmarked.

METHODS, CONTROL, SCALE.

All soundings were taken from the launch DORA,

while underway, using a hand lead line with a ten pound lead. The leadlines used were furnished by the U. S. Engineers, and had been used by them in a survey of Grays Harbor, and were therefore well seasoned. What was known as lead-line No. 4, was used on all but the last day and had very small and practically constant corrections. Leadline No. 3 which was used on G day had not been in use for some time and the corrections at the beginning and the end of the day differed considerably. In applying the leadline corrections on this day the mean of the corrections was used for the morning work and the corrections found at the end of the day were applied to the afternoon work, it being assumed that the morning's work had given the line its total stretch and no further change took place, that day. It is possibly true that the line took its final length befofe the time assumed, but the correction used is on the safe side. Lines were run in the general direction of the south channel and about 100 meters apart for the developement of it. The north channel was developed by a system of lines about 150 meters apart and running, in general with the Light house as a front fange. No cross lines were run except at the lower end of the south channel, where a shoal had been found, as it was thought that the closeness of the lines was a good check . It was also believed that lines at right angles to the current would not give accurate depths.

The usual method of the three point fix, using fixed objects on shore, for control of the position of the boat was used. With one exception the signals erected by Lieutenant Peacock and located by triangulation were still standing and were of sufficient number for the work. The signal erected by him at Bea had fallen and another one set up by this party in about the same place and called Bee, was located by angles and distances from triangulation station Beach 2. The distance, about 250 meters was measured twice with a 30 meter tape, while the angle at Beach 2 between Willapa Bay Lighthouse and Bee was measured three times with a hydrographic sextant. As a check on the location, the angles at Bee between the Lighthouse and the Mast of the Canadian Exporter Wreck, and between Beach 2 and the Lighthouse were measured each three times. The control for the tide reducers was obtained by readings taken on a plain tide staff set up on the wharf at Tokeland, where readings were taken at every half hour while sounding was being done. In passing it may be noted that the range of tide from the observations at Tokeland seemed to be quite a bit more than the predicted range for Willapa Bay Entrance.

The scale of the sheet used in the boat is 1:20,000.

COMPARISON WITH PREVIOUS SURVEYS, SHOALS.

Although it appears from the field plotting, that the controlling depth is about the same, in the south channel, as before, soundings over various portions of this area differ considerably from the work done in 1922. The change in the contours of the north channel and the bar north of the wreck of the Canadian Exporter, is very noticeable. The channel appears now, to have a controlling depth of 25 feet, while the bar has been moved to the westward about a quarter of a mile and the limit of the three fathom line is about a half mile south of its previous northern limit. Deeper water was found nearer shore to the north of the spit extending out from the Lighthouse, while the spit itself has been extended to the west and south. There is a shoal about 600 meters N X E of buoy No. 7, on which a least depth of 20 feet was found. It is this shoal, apparently, which several vessels have touched recently, probably due to their failure to allow for the effect of the current runs about northeast and across the channel when the tide is rising. About ~~200~~ 600 meters southeast of the same buoy a ~~23~~ 22 ft. spot was found. On a line between buoys No. 4 and No. 2 and about midway a sounding of ~~23~~ 28 feet was

gotten, and is apparently an extension from the shoal shown to thee eastward on the previous work and over which are breakers , now in moderate weather. About a quarter of the way towards buoy No. 2 from No. 4 and in line between them is a ~~23~~ 22 ft. spot. SOE

BOTTOM CHARACTERISTICS, BREAKERS, TIDE RIPS, CURRENT.

The bottom in the south channel is quite uneven and the statement of the crab-fishermen, that it is full of pot-holes and lumps is borne out by the soundings. The north channel is somewhat more even. The bottom, over the whole area is a hard fine sand.

Breakers occur on the bar to the south of the Canadian Exporter wreck, in nearly all weather, and in moderate weather they extend to the north over depths of about twenty feet. They also are seen on the shoal to the southeast of buoy No. 6, most of the time.

Strong tide rips were observed in most of the north channel during the ebb tide. The swell in the south channel, at this time of year is most pronounced during the rising tide, and on this account pilots try to take a vessel in or out on the beginning of the ebb right after high tide. The current in the north channel appeared much stronger in the north than

in the south channel and having its greatest strength from buoy No. 6 out as far as the wreck. No observations for strength of current were made, however. The current in the south channel appeare to be about Northeast on a rising tide and southwest on a falling tide.

TIDE PLANE, GEOGRAPHIC POSITION OF "BEE", TABLE OF STATISTICS.

Soundings were reduced to mean lower low water and the mark on the tide staff corresponding to this datum, was found by levels run between the staff and the bench marks set by previous parties and using the elevations as determined by them and furnished by the Washington office.

The Geographic position of station Bee is as follows: Latitude 48 - 44, D.M. [illegible] meters, Longitude 124 - 05, D.P. [illegible] meters.

A table of statistics is attached hereto.

To: The Director,
Via: The Inspector,
Seattle Field Station.

Respectfully submitted,

Leroy P. Raynor,
Chief of Party.

Statistics No._____

Date 1924	Letter	Vol.	Pos.	Sdg's.	Miles	Vessel
July 9	A	1	34	244	7	Launch Dora
11	B	1	58	365	11	" "
12	C	1	93	520	16	" "
14	D	1	41	232	8	" "
17	E	1 & 2	114	808	18	" "
18	F	2	122	655	22	" "
21	G	2	97	501	11	" "
Total			559	3115	93	

The unit for soundings is feet and the plane of reference Mean Lower Low Water. A plain staff tide guage was erected on the wharf at Toke Point and used for the work by applying a correction of -20 minutes to the time of tide where the soundings were taken in accordance with INSTRUCTIONS issued to the Inspector Seattle Field Station on June 16,1924.

Plane of reference, reading on guage 4.00 ft.

Lowest tide observed, reading on guage 1.20

Highest tide observed, reading on guage 12.00

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ADDRESS THE DIRECTOR
U. S. COAST AND GEODETIC SURVEY

AND REFER TO No.
9-VEC

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
WASHINGTON

September 11, 1924.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4363

Willapa Bar, Washington

Surveyed in 1924

Instructions dated June 16, 1924.

Chief of Party, L. P. Raynor.

Surveyed by L. P. Raynor.

Protracted and soundings plotted by L. P. Raynor.

Verified and inked by W. J. Mackenzie.

1. The records conform to the requirements of the General Instructions except that boat's courses are omitted throughout and the bottom characteristics are generally omitted.

2. The plan and character of development conform to the requirements of the General Instructions.

3. The specific instructions for this survey were given by the Inspector of the Seattle Field Station and are not available for comparison with the finished work.

4. In a number of instances the sounding line crossings are inadequate. See the following: 100 to 101 E 3 feet too shoal; 80 to 81 E 3 feet too shoal; 27 feet at 9 A on 44 at 61 G; 18 feet at 16 E on 31 at 22 C.

   It is noted that the area of this sheet is very broken and probably the differences are more apparent than real. Also none of the differences vitally affect the survey.

5. The information is sufficient for drawing the usual depth curves.

6. The usual field plotting was done by the field party. The position numbers and letters are too large - sometimes larger than the soundings.

7. There is no contemporary surveying with which to compare junctions.

8. No further surveying is required within the area covered by the sheet.

9. The character and scope of the surveying and field drafting are good.

10. Reviewed by E. P. Ellis, September, 1924.

C.1.C.

Field Records

August 21, 1926.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
2 volumes of sounding records for

HYDROGRAPHIC SHEET 4168

Locality: Entrance to Willapa Bay, Washington.

Chief of Party: L. P. Reynar in 1926.
Plane of reference is Mean lower low water reading
4.0 ft. on tide staff at Tahe Point

For reduction of soundings, condition of records satisfactory
except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered wrong column.
7. Field reductions entered in "Office"column.
8. Location of tide gauge not given at beginning of each day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tubeused not stated.
11. Sounding tube No. entered in column of"Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks

Harrmann
Actg Chief, Division of Tides and Currents.

September [illegible]

[illegible]

Inspector,
U. S. Coast and Geodetic Survey,
Seattle, Washington.

The Director, U. S. Coast and Geodetic Survey.

Hydrographic Sheet No. 4353.
Survey of Willapa Bar by Lieut. [illegible] Raynor.

Referring to your letter dated August 12, 1924, [illegible] and smooth sheets and descriptive report of Lieut. Raynor's [illegible] Willapa Bar, Washington, I have to advise you that the [illegible] verification and chart compilation have been accomplished and the following general remarks are made for your information and also for Lieut. Raynor's:

The area covered by the Survey, being erodable with [illegible] channels, would naturally indicate irregularities in [illegible] the verification of the smooth sheet brought out [illegible] which can not be accounted for by such natural [illegible] Several adjacent and coincident lines show [illegible] differences in depths while others indicate [illegible] is doubtful. The differences, in some cases, [illegible] due to the use of leadlines graduated in feet, [illegible] confusion, with consequent misreading, where the [illegible] between [illegible] and 55 feet. The greatest discrepancy [illegible] soundings taken approximately on the same spot [illegible] conditions should have been investigated in the [illegible] in view of the necessity of [illegible] of the survey prior to the [illegible] The bottom characteristics [illegible] the work. The junction with [illegible] in so far as [illegible] The character and scope of the [illegible] are good. Due allowance, of course, is made for [illegible] conditions under which Lieut. Raynor's party [illegible]

[illegible] irregularities of the bottom in this [illegible] noted, while taken into consideration [illegible] the survey from being considered [illegible] at this time.

[illegible] further information, you are advised [illegible]

4363

4363

HYDROGRAPHIC TITLE SHEET

4363

State: Washington

General Locality: Willapa Bay

Locality: Willapa Bar

Surveyed by: Leroy P, Raynor

Chief of Party: Leroy P. Raynor

Dates: July 9 to July 21, 1924

Scale: 1:20,000

Forwarded: Sounding records 2, Tide books 1,

Level records 2, Boat sheet 1, Table of statistics 1